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Evens & Howard
Fire Brick Co. – St. Louis

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1915

Evens & Howard Fire Brick Co.

Main Office, 916-922 Market Street
ST. LOUIS

CHICAGO OFFICE
1034 National Life Insurance Building
Chicago, Illinois

MANUFACTURERS OF

Ferguson Segment Sewer Block

WORKS

Nos. 1 and 2	No. 3
Howard Station	Gregg Station

ST. LOUIS, MO.

Introductory

VITRIFIED salt glazed clay is almost universally conceded to be the most efficient and permanent material for sewer construction. We are manufacturing and have placed on the market the Ferguson Segment Sewer Block, as detailed on the following pages and request a careful investigation.

Being one of the oldest manufacturers of Clay Products in the United States, established in 1857, our experience enables us to produce a quality of material that is unquestioned, and we are enabled by our extensive facilities to handle large contracts and to give prompt and efficient service to our customers.

Ferguson Segment Sewer Block

MATERIAL Ferguson Segment Blocks are made of a highly salt glazed and thoroughly vitrified Missouri clay, justly famous throughout this country for its superior qualities.

STRENGTH In all sewer construction strength of design is the first consideration. With the Ferguson Segment Block method, which consists of a combination of two interlocking units, the material is so placed as to give the maximum resistance at the point of the greatest stress, and the ultimate strength of the structure is much greater than is necessary to withstand any forces that may be encountered. The interlocking feature is obtained by means of grooves and ribs and Portland Cement mortar, thus giving maximum strength.

WATER TIGHTNESS This very essential quality is obtained by means of interlocking two vitrified clay blocks in such a manner as to give staggered joints both transversely and longitudinally, so that at no point in the circle does a mortar plane exist reaching through the entire structure.

The area of the surface of the blocks exposed is about 96 per cent of the total area of the inside surface of the sewer. Therefore, the joints necessary represent only four per cent of the total inside surface.

Vitrified salt glazed blocks are absolutely impervious to water, and no leakage can possibly occur except through the four per cent of the surface represented by mortar joints, and inasmuch as these joints are made of a one to two and one-half mortar and are backed by the outside vitrified block, the structure is water-tight.

JOINTS The method of making joints is such as to secure the most perfect bond; all joint faces are deeply scarified. Longitudinal faces of the blocks are mortared, and between the inner and outer blocks a mortar bed exists and the lining blocks pressed and tamped into place, thus securing a uniform bearing and a perfectly sealed joint.

In no instance is it necessary to make the joint by a sliding motion of the blocks or to obtain the same by letting blocks settle into place when the forms are removed.

As all mortar joints are fully exposed during construction a perfect bond is easily secured.

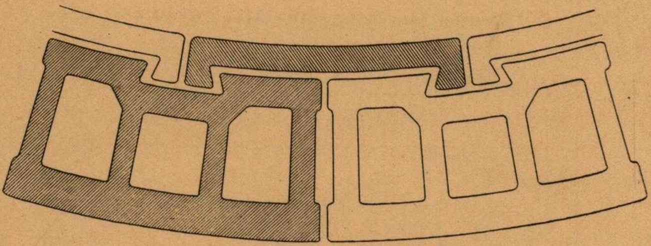
SUB-DRAIN When the invert has been laid, the ducts in the outer or B block form a perfect sub-drain, and eliminate an independent drain which is necessary in many cases. These ducts are provided for in all outside or B blocks and will be particularly appreciated where wet trenches are encountered as often happens during construction.

EFFICIENCY AND ECONOMY

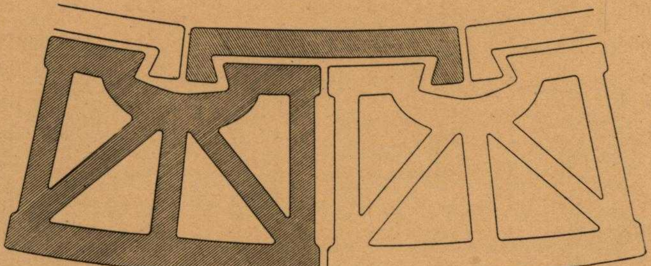
Engineers, as a rule, agree as to the efficiency of salt glazed vitrified clay for use in construction of sanitary and storm sewers, owing to its being practically indestructible; to the increased sewerage flow obtained; to the fact that thorough inspection is easily made of each unit of material and on account of the great speed in construction.

EASE OF CONSTRUCTION

The construction work can be advanced very rapidly, closely following the excavation. A line of B or Outer blocks is first laid along the invert to the established grade. On each side of this successive lines of blocks are laid to the spring line, to the proper size template, care being taken that the longitudinal mortar joints between each successive line of blocks are made in a workmanlike manner. Mortar is then applied to the inner face of the blocks and the lining or A blocks are placed in position in this mortar bed, commencing at the invert and continuing to the spring line. In constructing the crown a light form is used. Beginning at the spring line, lining blocks are laid over the arch, a thin coating of mortar is then applied, upon which the B blocks are placed. Care should be taken that the longitudinal joints between the successive lines of B blocks are properly made. The form is then lowered and advanced for further work. Backfilling can be started immediately after the removal of the form.



Type of Block 30″ to 78″



Type of Block 84″ to 108″

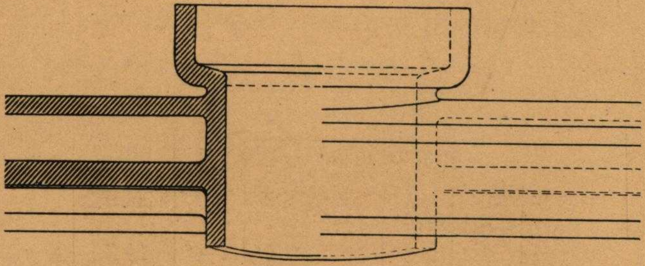
Measurements and Weights

Ferguson Segment Sewer Blocks

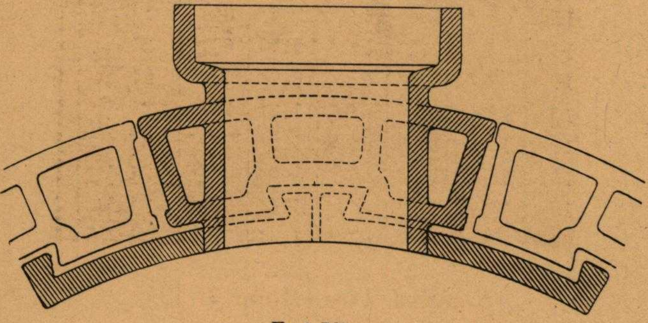
Patented March 1, 1910—May 26, 1914

Size Inches	Number of Blocks to Circle	INNER BLOCK		OUTER BLOCK		Thickness of complete Sewer	Thickness of completed Wearing Surface	Weight per Lin. Foot.
		Thickness in.	Width in.	Thickness in.	Width in.			
30″	10	¾″	9.0″	3¾″	9.6″	4¾″	1⅝″	250 lbs.
33″	11	¾″	9.0″	3¾″	9.6″	4¾″	1⅝″	275 lbs.
36″	12	¾″	9.0″	3¾″	9.6″	4¾″	1⅝″	300 lbs.
39″	13	¾″	9.1″	4½″	9.5″	5½″	1 11/16″	365 lbs.
42″	14	¾″	9.1″	4½″	9.5″	5½″	1 11/16″	395 lbs.
45″	15	¾″	9.1″	4½″	9.5″	5½″	1 11/16″	425 lbs.
48″	14	⅞″	10.4″	4⅞″	10.9″	6″	1⅞″	495 lbs.
51″	15	⅞″	10.4″	4⅞″	10.9″	6″	1⅞″	530 lbs.
54″	16	⅞″	10.3″	5⅜″	10.7″	6½″	2″	605 lbs.
57″	17	⅞″	10.3″	5⅜″	10.7″	6½″	2″	645 lbs.
60″	16	1″	11.4″	6″	11.9″	7¼″	2¼″	760 lbs.
63″	17	1″	11.4″	6″	11.9″	7¼″	2¼″	810 lbs.
66″	18	1″	11.2″	6″	11.6″	7¼″	2¼″	840 lbs.
69″	19	1″	11.2″	6″	11.6″	7¼″	2¼″	885 lbs.
72″	20	1″	11.0″	6¼″	11.4″	7½″	2¼″	940 lbs.
78″	22	1″	10.9″	6½″	11.2″	7¾″	2¼″	1065 lbs.
84″	24	1″	10.7″	7″	11.0″	8¼″	2¼″	1300 lbs.
90″	26	1⅛″	10.6″	8″	10.9″	9⅜″	2⅜″	1520 lbs.
96″	28	1⅛″	10.5″	8″	10.8″	9⅜″	2⅜″	1630 lbs.
102″	30	1⅛″	10.4″	8⅝″	10.7″	10″	2⅜″	1810 lbs.
108″	30	1⅛″	11.0″	9⅛″	11.3″	10½″	2⅜″	1930 lbs.

NOTE:—In figuring total thickness of sewer allow ¼ inch for cement joint between inner and outer blocks.

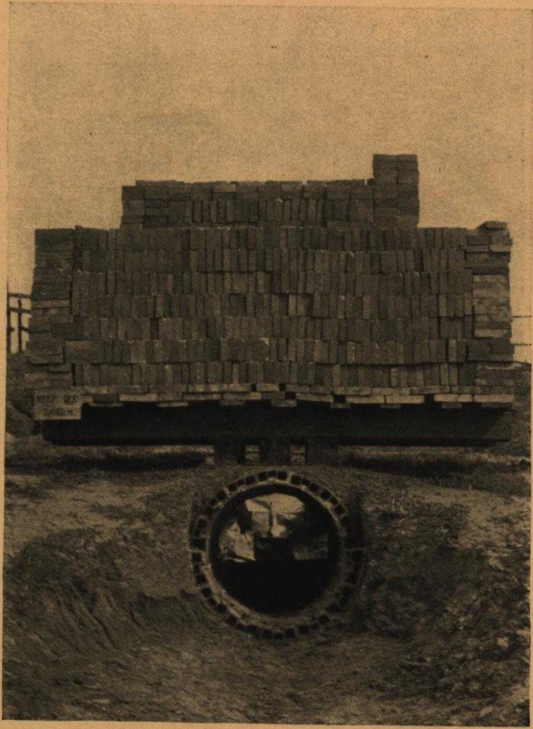


Side View



End View

T Connection on Segment Block
Furnished as Specified



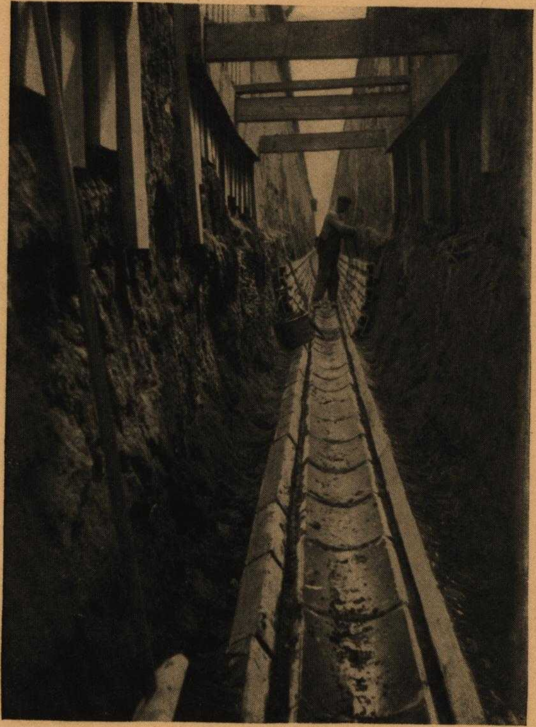
Loading Test—June 9, 1915

48″ Ferguson Segment Sewer Block

St. Louis, Missouri

75,000 Pounds on 4 Lineal Feet of Sewer

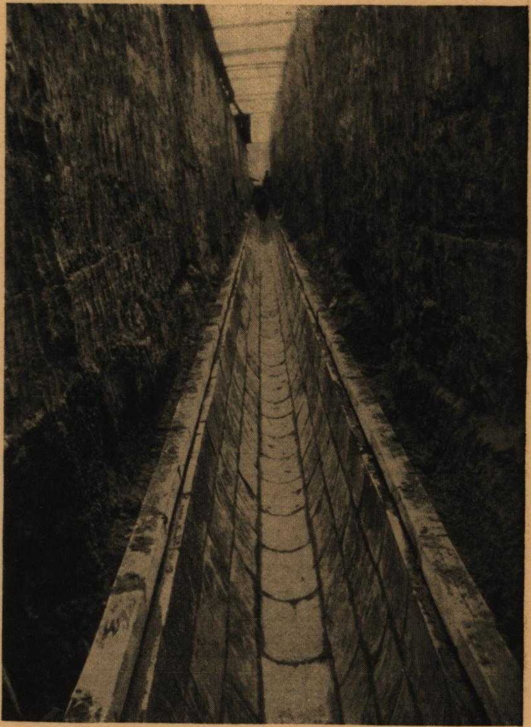
Measurements were made continually during the loading from four points 12 inches apart on the line of the invert to four points directly above on the line of the crown. There was no measurable deflection nor did any crack appear.



Ferguson Segment Block Construction

30″ x 45″ Egg Shape

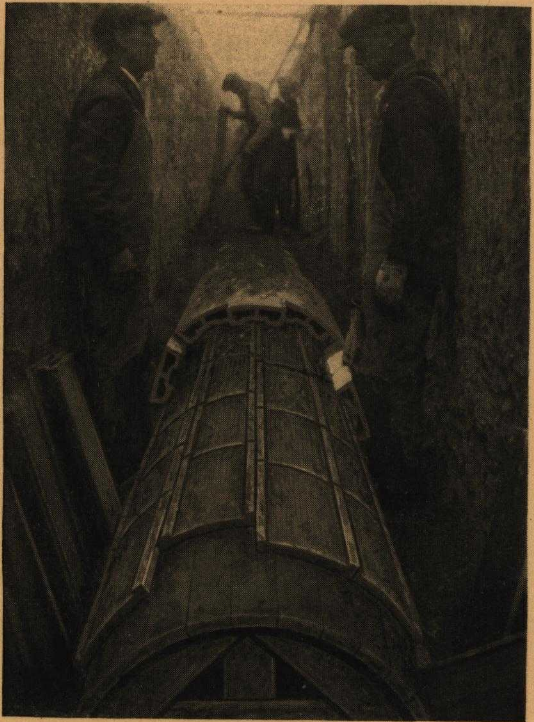
CALGARY, ALBERTA
CANADA



Ferguson Segment Block Construction

30″ x 45″ Egg Shape

CALGARY, ALBERTA

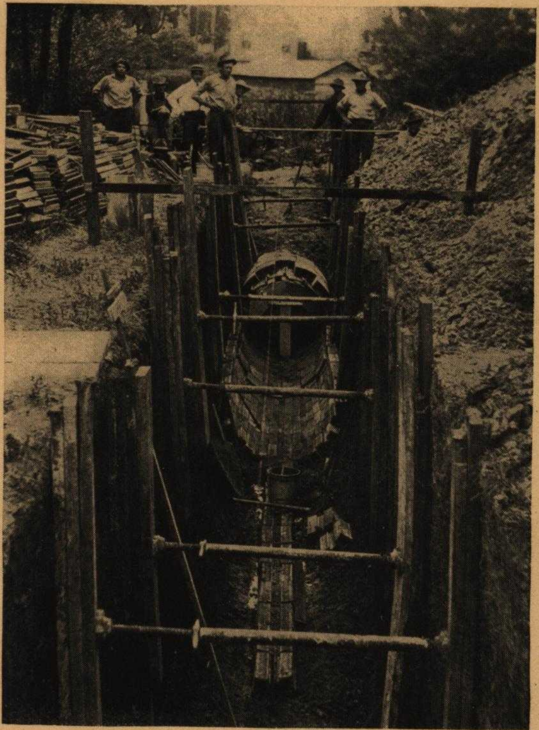


Calgary, Alberta, May 26, 1915.

Evens & Howard Fire Brick Co.,
St. Louis, Missouri.

Gentlemen: Referring to inquiry through Rhoads about Ferguson Segments, City of Calgary just completed one mile section. Makes very excellent water-tight sewer, smooth invert, easily laid, entirely satisfactory.

GEO. W. CRAIG,
City Engineer.



MORENO, BROOKS & BURKHAM
CONTRACTING ENGINEERS
MAIN OFFICE, SYNDCIATE TRUST BLDG.
ST. LOUIS, MO.

Evens & Howard Fire Brick Co.,
St. Louis, Missouri.

July 3, 1915.

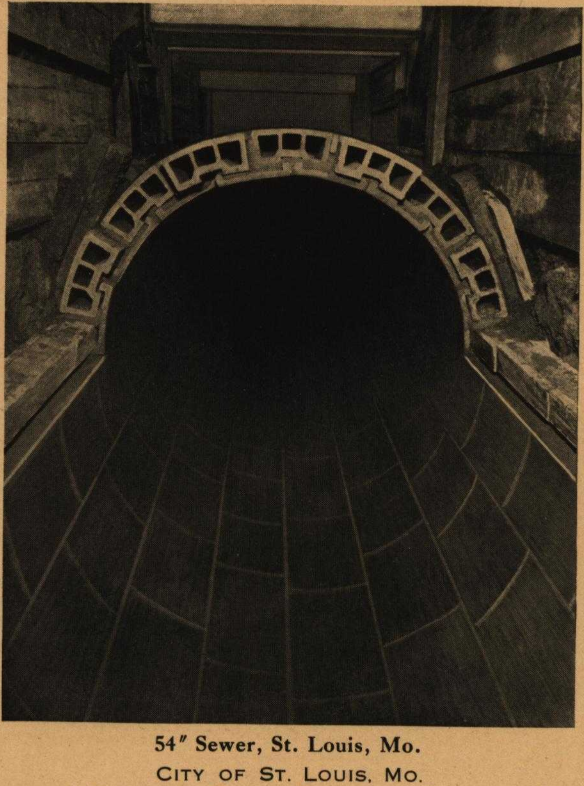
Gentlemen: In response to your request of even date, we are pleased to state that we recently completed laying a line of your 48-inch Ferguson Segment Sewer Block in Argenta, Arkansas.

We found this block easy to lay, and makes a strong and absolutely water-tight sewer, which is proving very satisfactory.

We will be pleased to recommend this form of construction to anyone desiring information in regard to same.

Very truly yours,
MORENO, BROOKS & BURKHAM,
E. G. Burkham.

EGB:L



54″ Sewer, St. Louis, Mo.

CITY OF ST. LOUIS, MO.
DIVISION OF DESIGN—SEWERS AND PAVING

Evens & Howard Fire Brick Co., February 23, 1916.
920 Market Street, St. Louis, Mo.

Gentlemen; In reply to your inquiry of recent date, I can state that the Board of Public Service of St. Louis has approved the specifications for segment sewer block and that to date the Ferguson Block is the only one that has been used under the specification.

We are entirely satisfied that the segment block has sufficient strength for all normal conditions. It has been found to be simple to lay and that part which has been furnished (60 inch and under) shows a smooth interior finish.

(Signed) W. W. HORNER,
Engineer-in-Charge.

SPECIFICATIONS OF STANDARD SEWER PIPE

Inside Diameter, Inches.	Thickness of Shell, Inches.	Depth of Socket, Inches.	Annular Space in Socket.		Length of Straight Pipe, Feet.	Length of Junctions, Feet.	Weight Per Foot, Pounds.	Carloads 14 Tons, Feet.
			Base of Socket, In.	Top of Socket, In.				
3	9/16	1 1/2	1/4	5/16	2	2	6	4650
4	5/8	1 1/2	1/4	5/16	2	2	10	2800
5	5/8	1 3/8	1/4	5/16	2	2	12	2330
6	3/4	1 7/8	1/4	5/16	2	2	16	1750
7	3/4	1 7/8	1/4	5/16	2	2	18	1550
8	7/8	2 1/4	5/16	3/8	2 1/2	2 1/2	24	1100
9	7/8	2 1/2	5/16	3/8	2 1/2	2 1/2	27	1040
10	7/8	2 1/2	5/16	3/8	2 1/2	2 1/2	30	930
12	1	3	3/8	7/16	2 1/2	2 1/2	40	700
15	1 1/8	3 1/8	1/2	5/8	2 1/2	2 1/2	60	470
18	1 1/4	3 1/4	1/2	5/8	2 1/2	2 1/2	85	330
20	1 5/16	3 1/2	9/16	3/4	2 1/2	2 1/2	105	270
21	1 3/8	3 1/2	9/16	3/4	2 1/2	2 1/2	110	260
22	1 1/2	3 1/2	9/16	3/4	2 1/2	2 1/2	115	260
24	1 5/8	4 1/4	5/8	7/8	2 1/2	2 1/2	135	210
27	2 1/8	4 1/2	3/4	1	3	3	215	129
30	2 1/4	4 3/4	15/16	1 3/16	3	3	270	108
33	2 3/8	5	1 1/16	1 5/16	3	3	320	90
36	2 1/2	5 1/8	1 3/16	1 7/16	3	3	365	81
42	3	5 1/4	1 3/16	1 7/16	3	3	500	60

Improved corrugated deep sockets and corrugated ends.

SPECIFICATIONS OF DOUBLE STRENGTH SEWER PIPE

Inside Diameter, Inches.	Thickness of Shell, Inches.	Depth of Socket, Inches.	Annular Space in Socket.		Length of Straight Pipe, Feet.	Length of Junctions, Feet.	Weight Per Foot, Pounds.	Carloads 15 Tons, Feet.
			Base of Socket, In.	Top of Socket, In.				
12	1 1/8	3	1/2	5/8	2 1/2	2 1/2	52	577
15	1 1/4	3 1/8	1/2	5/8	2 1/2	2 1/2	76	400
18	1 1/2	3 1/4	1/2	5/8	2 1/2	2 1/2	103	291
20	1 2/3	4	9/16	3/4	3	2 1/2	125	240
21	1 3/4	4	9/16	3/4	3	2 1/2	136	220
22	1 7/8	4	9/16	3/4	3	2 1/2	150	200
24	2	4 1/4	5/8	7/8	3	2 1/2	170	181
27	2 1/4	4 1/2	3/4	1	3	3	240	125
30	2 1/2	4 3/4	15/16	1 3/16	3	3	305	99
33	2 5/8	5	1 1/16	1 5/16	3	3	340	90
36	2 3/4	5 1/8	1 3/16	1 7/16	3	3	390	77
42	3	5 1/4	1 3/16	1 7/16	3	3	500	60

Double Strength Pipe not manufactured in sizes smaller than 12 inches.

The thickness of the shell of Double Strength Pipe must not be less than one-twelfth of the inside diameter.

Double Strength Pipe is the same quality as Standard Pipe but is thicker and stronger.

Improved corrugated deep sockets and corrugated ends.

WESTERN PRICE LIST OF STANDARD AND DOUBLE STRENGTH PIPE

Inside Diameter Inches	Straight Pipe per foot	Curves and Elbows, each	T and Y Junctions 2 feet long, each	T and Y Junctions 2½ feet long, each	T and Y Junctions 3 feet long, each	*Traps, each	†Double Branches and Breeches, each	Increasers, Decreasers and Slants, each
3	$0 15	$0 50	$0 60	-----	-----	$1 70	$0 90	$0 45
4	20	60	80	-----	-----	2 10	1 20	60
5	25	75	1 00	-----	-----	2 50	1 50	75
6	30	1 00	1 20	-----	-----	2 90	1 80	90
7	35	1 25	1 40	-----	-----	3 50	2 10	1 05
8	45	1 65	1 80	2 03	-----	4 50	2 70	1 35
9	50	1 75	2 00	2 25	-----	5 00	3 00	1 50
10	60	2 10	2 40	2 70	-----	6 00	3 60	1 80
12	75	2 75	3 00	3 38	-----	8 50	4 50	2 25
15	1 00	3 75	4 00	4 50	-----	-----	-----	3 00
18	1 50	4 75	6 00	6 75	-----	-----	-----	4 50
20	1 75	5 75	7 00	7 88	-----	-----	-----	5 25
21	2 00	6 75	8 00	9 00	-----	-----	-----	6 00
22	2 10	7 00	8 40	9 45	-----	-----	-----	6 30
24	2 50	8 00	10 00	11 25	-----	-----	-----	7 50
27	3 25	16 25	-----	-----	16 25	-----	-----	16 25
30	4 00	20 00	-----	-----	20 00	-----	-----	20 00
33	5 00	25 00	-----	-----	25 00	-----	-----	25 00
36	6 00	30 00	-----	-----	30 00	-----	-----	30 00
42	8 50	42 50	-----	-----	42 50	-----	-----	42 50

STANDARD PIPE

Sizes 3-inch to 6-inch, inclusive, in 2-foot lengths.
Sizes 8-inch to 24-inch, inclusive, in 2½-foot lengths.
Sizes 27-inch to 42-inch, inclusive, in 3-foot lengths.

DOUBLE STRENGTH PIPE

Sizes 12-inch to 18-inch, inclusive, in 2½-foot lengths.
Sizes 20-inch to 42-inch, inclusive, in 3-foot lengths.
*Both P Traps and Running Traps are made with or without hand holes.
†Double Branches, both T and Y above 12-inch made only to order.
Branches, Increasers, Decreasers, Slants, 27 to 36-inch are 3 feet long.
Above Price List is subject to large discounts.
For Carloads, if desired, we make prices delivered at destination.
For less than Carloads we make prices f. o. b. St. Louis only.
See specifications of Standard and Double Strength pipe on page 15.

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KUTTERER-JANSEN
SAINT LOUIS

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